# Watershed Coalition News

INFORMATION FOR CENTRAL VALLEY AGRICULTURE

BMP SPECIAL ISSUE 2006

NORTH AND SOUTH VALLEY


IN THIS ISSUE




PUBLISHED BY
Coalition for Urban/Rural Environmental Stewardship
www.curesworks.org

WITH SUPPORT FROM
Almond Board of California
www.almondboard.com

California almonds are in!
www.AlmondsAreIn.com

EDITOR:
Parry Klassen parryk@comcast.net


## Management Plans Start Process of Fixing Problems

Watershed coalitions in the Central Valley have long maintained that farmers will address water quality problems once those problems have been identified. As Central Valley coalitions complete their second full year of sampling streams and sloughs with farm drainage, results are pointing to certain waterways with persistent exceedances of water quality standards for pesticides, salts or physical parameters such as pH or dissolved oxygen.

As part of the Irrigated Lands Program, coalitions must report to the Water Board when a discharge causes or contributes to an exceedance in receiving water imitations. After reviewing those reports, the Water Board's executive officer, Pamela Creedon, has the authority to require that a coalition submit a management plan to address one or more problems in a watershed.

As of August 2006, Central Valley watershed coalitions have received requests for three management plans that cover:

- boron, dissolved oxygen and pH in Yolo County waterways (Tule Canal, Z-Drain, Ulatis Creek and Shag Slough);
- chlorpyrifos and water column toxicity in Merced and Madera counties waterways (Ash Slough, Duck Slough, Highline Canal and Merced River); and
- diazinon in the Sacramento and Feather Rivers.

Simply defined, management plans are work plans, written by the impacted coaliton and approved by the Water Board, that describe known and potential sources of a water quality problem and outline a plan to solve the problem. Included in the plan is the requirement to evaluate the effectiveness of management practices to achieve water quality objectives. According to a recent management plan request, a coalition must also "identify additional actions, including different or additional management practice implementation or education outreach, that the coalition proposes to implement to achieve water quality objectives" for the constituent in question. Also required is a waste specific monitoring plan and implementation schedule to address the problem.

What irrigated crop landowners in a watershed will ultimately have to do on their farms will vary based on the problem source and management practices identified to solve the problem. In the diazinon management plan developed for orchard growers in the Sacramento Valley, the coalition stressed the new diazinon label changes as the means to solve the problem. Subsequently, the Water Board required that the coalition survey diazinon users in the region to gauge the level of understanding of the new label and ask if the label requirements were in fact being followed. Another significant – and costly – undertaking was performing diazinon compliance monitoring along the Sacramento and Feather Rivers.

As in the diazinon plan, gathering information from landowners through management practice surveys will be important components of management plans particularly when a plan addresses pesticides. The burden to develop and mail the surveys then compile results will lie entirely with the watershed coalitions. Water Board staff puts particular emphasis on BMP survey results and the information combined with water monitoring results to gauge the success of a management plan and ultimately, if the water quality problem is solved.

### *Commonly used agricultural pyrethroids:*

- Capture; Brigade
- Baythroid
- Karate; Warrior
- Ammo
- Decis
- Danitol
- Asana
- Pounce; Ambush
- Scout
- Fury

## Pyrethroids Targeted for Reevaluation

The California Department of Pesticide Regulation (DPR) is expected to issue a reevaluation notice in late August to the registrants of pyrethroid insecticides. In news reports published in July, DPR Director Mary-Ann Warmerdam is quoted as saying that notices will be sent to manufacturers of 600 pyrethroid products informing them that the state is reevaluating their use. A reevaluation could result in label changes or removing some uses altogether. Warmerdam said manufacturers will need to provide DPR with data to either eliminate the concern, reformulate products or "consider taking them off the market."

Concern over pyrethroids' impact on water quality started after studies published by Donald Weston, an adjunct professor of integrative biology at UC Berkeley, showed pyrethroids accumulating in waterways draining irrigated farmland and urban areas. Pyrethroid levels in the sediment were shown to be toxic to *hyallela azteca*, a sediment dwelling insect and test organism.

News

## BMPs Sought for Manure Applications to Cropland

Consistently high *e coli* detections at sites monitored by the East San Joaquin Water Quality Coalition has prompted the group to begin talking to landowners about the potential impact of manure applications to irrigated crop land. While the e coli detections have not been traced back to farmers' use of steer or poultry manures, the coalition decided to begin compiling available information on practices related to manure applications and water quality.

The Almond Board of Coalition has some of the most detailed information on manure application and storage practices in its publication "Food Quality and Safety Manual." Some of the practices include:

- Apply manure when the soils are warm and not saturated;
- Incorporate manure into soil immediately after application to prevent wind drift and runoff in storm water;
- If incorporation isn't possible use adequately composted materials to maximize pathogen elimination.

The Almond Board recommends using only compost/manure that has undergone pathogen reduction by decomposing and stabilizing. Non-composted or incompletely composted manure can carry harmful pathogens which can survive for several years after application. If manure is composted in a windrow system, temperatures should be maintained between 131° F-141°F for at least 15 days. The windrows should also be rotated at least five times over this period.

Later in 2006, several of the watershed coalition will coordinate an effort to further refine and add to the list of BMPs for poultry and steer manure applications to irrigated crop lands. Another effort funded by the coalitions will be identifying sources of e coli through DNA studies. The study, being performed by Michael Johnson, U.C. Davis, will determine whether the pathogens originate from wildlife, domestic animals (cattle, poultry or other livestock) or humans. Once the sources are identified, the coalitions can more effectively focus a mitigation effort.

*This special issue of Watershed Coalition News highlights the steps coalitions groups and individual growers are taking to implement components of the Irrigated Lands Program. The focus is on how Best Management Practices (BMPs) can be used to address farm runoff into streams and rivers.*

## Coalition Takes Targeted Approach

The East San Joaquin Water Quality recently submitted to the Water Board a management plan to address multiple water quality exceedances of the insecticide chlorpyrifos (Lorsban, Lock-On) in three waterways. The plan outlines approaches to identify uses of chlorpyrifos, primarily through county pesticide use reports, and distributing information on management practices to prevent future movement of the insecticide into waterways.

A key component of the coalition's management plan is targeting landowner communications to a limited land area near the impacted waterways. Over the past two years, the coalition has been building a GIS data base of all landowners and farms in the coalition coverage area.

Landowner information was gathered from county tax assessor records and is then overlaid on a watershed map. Properties adjacent to or in close proximity to each waterway sampled by the coalition are then separated into subwatershed mailing lists. Those landowners then become the primary focus of mailings and notices for local workshops that cover BMPs to solve the water quality problem. While farmers outside of the focus area could be contributing to water quality degradation, the coalition believes its priority should be working with landowners and operators who have the highest potential impact on correcting a problem then add other areas as information becomes available.

## Central Coast Growers Developing Farm Plans

Farm plans have been completed on more than 300,000 acres of irrigated cropland on the California Central Coast, according to a recent staff report from the Central Coast Regional Water Board. The conditional waiver adopted in that region requires all landowners to complete a farm plan and attend water quality education seminars to be in compliance with the program. In 2005, 13 farm water quality planning short courses along with 15 other conferences and workshops were held in the region.

The farm plans cover 69% of the total irrigated acres in the Central Coast region (Gilroy to Santa Barbara), estimated at more than 430,000 irrigated acres. Farmers can go online to sign up for the program or attend meetings to gain assistance in writing the plan. The meetings are organized by UC Cooperative Extension and the Central Coast Water Quality Preservation, Inc., (CCWQP) the entity conducting water monitoring in the region. To date, 1577 farmers with 380,000 irrigated acres have enrolled in the program. Water Board staff expect the number of farmer participants to eventually double as enforcement activities increase in coming months.

Water monitoring in 2005 as part of the conditional waiver program shows that agriculture on the Central Coast has water quality challenges ahead. Phase 1 of the monitoring program, which includes toxicity testing with the water flea *(ceriodaphnia dubia)*, showed widespread, acute toxicity to the organism at many of the 25 sites sampled in the region, according to a Water Board staff report. They cited previous studies in the lower Salinas and Santa Maria watersheds where sources of toxicity were traced back to chlorpyrifos and diazinon. As follow up to the 2005 results, CCWQP will repeat sampling at the 25 sites and include organophosphate pesticide screens in the testing. The group also is hosting outreach sessions with landowners to explain water monitoring results and coordinate with technical assistance organizations for management practice training.

## Growers Can Expect More BMP Surveys

Central Valley watershed coalitions have begun an effort to gain a better understanding of just how many Best Management Practices (BMPs) are being used by farmers to address water quality problems. The reason for the effort is twofold: activists are accusing the coalitions and growers of not adopting any BMPs in response to water quality problems indicated by recent monitoring results. More importantly, several coalitions have developed Management Plans for pesticide exceedances of water standards under Water Board orders, plans which require use of management practice survey results to gauge level of BMP use upstream of sampling sites. While surveys have never been popular with farmers, an important measure of success for watershed coalitions will be proving to the Water Board that farmers are adjusting practices that could contribute to off site movement of pesticides or other farm inputs.

## Nutrient BMPs for Irrigated Cropland

Nitrogen and phosphorus fertilizers are the latest farm inputs that watershed coalitions must monitor for in water sampling programs. If levels of nutrients found in the sampling exceed water quality standards, coalitions will begin distributing information to landowners on BMPs to address farm runoff containing nutrients.

Fresno County Farm Bureau recently published *"Cotton Management Practices for Protecting Surface Water,"* which contains a section on nutrient BMPs usable for most commercial crops. The introduction states: "All nutrients, including commercial fertilizer, animal manure, compost or other soil amendments, have the potential to move off site and enter waterways. Implement good housekeeping practices to prevent contamination of groundwater and/or surface water." Nutrient management BMPs can include:

### *Soil, Tissue and Water Testing*

■ Base amounts and timing of nitrogen (N), phosphorus (P) and potassium (K) fertilizer on estimated crop needs and a realistic assessment of past crop production levels versus production goals.

■ Before applying N early in the growth cycle, assess the amount of nitrate already present by soil (or soil solution) sampling and analysis.

■ Use plant tissue sampling for mid- and late-season fertilizer decisions. According to University trials, petiole or leaf blade testing for nutrient assessments are most useful during the primary bloom period, from about 1 week before first bloom through the first 3 to 4 weeks of bloom.

■ Measure nitrate levels in the irrigation water and adjust N fertilizer rates accordingly. If changes in water supply occur during the season (such as from canal water to well water), re-test for irrigation water nitrate.

### *Application Timing*

■ Split nitrogen fertilizer applications where possible to reduce the chance of deep percolation losses (moving soluble N with rain or irrigation water) below the effective rooting zone.

■ Do not apply excessive fertilizer N immediately prior to or during the rainy season.

■ Avoid high application rates that supply N in excess of total season plant needs for well-managed cotton, particularly when applying manure or liquid dairy waste prior to planting or early in the growing season.

### *Fertilizer Placement*

■ Place N fertilizer where maximum plant uptake will occur.

■ Immediately incorporate manures or compost to prevent transport in storm runoff.

### *Fertilizer Application Practices*

■ Shut off fertilizer applicators during turns and use check valves when possible.

■ Maintain proper calibration of fertilizer application equipment.

■ Whenever injecting fertilizer into irrigation water, install proper backflow device.

■ Fertilizer tanks and equipment should be cleaned by rinsing in the field or at a properly designed wash facility. Rinseate and/or sludge should be spread evenly across a field using good agronomic practices.

■ Clean-up fertilizer spills promptly.

■ When making foliar fertilizer applications by air, avoid overspray of waterways or sensitive areas.

■ When transferring fertilizer into on-farm storage or into a fertilizer applicator, take care not to allow spilled materials to accumulate on the ground.

## Pyrethroid BMPs Focus on Sediment

Research in recent years has pointed to the potential that runoff of pyrethroid insecticides could be contributing to sediment toxicity in waterways draining farm fields. Prompted by this research, two pyrethroid registrants, Syngenta and Bayer Crop Science, commissioned the Coalition for Urban Rural Environmental Stewardship (CURES) to develop a BMP publication entitled "Pyrethroids/Orchard Crops: Management Practices for Protecting Water Quality." The emphasis in the publication is on managing spray drift and preventing sediment from moving off site. Sediment transport is a particular focus since pyrethroids are not generally found in water due to their lack of solubility. They also have short persistence in water because they rapidly move into soil and sediment particles or onto plant surfaces.

The publication recommends that when pyrethroids or any pesticide or nutrient is applied that growers:

■ Reduce or eliminate sediment movement off the orchard site;

■ Reduce or eliminate flows of runoff water carrying dissolved pesticides and nutrients.

A key practice in orchards is having dense, well-established orchard floor vegetation during dormant season to reduce runoff of farm inputs and sediment. Vegetation provides benefits through:

■ Reduction in runoff volume through increased water infiltration;

■ Reduction in sediment generation caused by rainfall impact on bare ground;

■ Reduction in pesticide mass carried by sediment;

■ Faster breakdown of pesticides on vegetation than soil;

■ Slows water movement and reduces sediment carried in surface flows;

■ Adsorption of pesticides to plant surfaces.

Practices that can assist in managing runoff water to minimize or eliminate the impact of off-site movement of sediment include:

■ Sediment basins;

■ Tailwater return systems;

■ Riser boards or dirt banks that retain winter rain runoff (after dormant sprays are applied) for a period of time to allow sediment to settle out.

Maintaining vegetative buffers, vegetative filter strips and vegetative barriers around the orchard perimeter can also reduce sediment transport out of orchards and trap pesticides to allow for degradation. Also use of vegetated ditches and holding ponds to enhance reduction of residues in tailwaters and to slow flow (thus reducing sediment transport potential).

CURES also publishes a row crop version of the publication. Both are available at www.curesworks.org.

# Central Valley Watershed Coalitions Contact Information

## Sacramento Valley

### *Sacramento Valley Water Quality Coalition*
(also Sacramento Valley subwatershed contacts)

David Guy
Aaron Ferguson
aferguson@norcalwater.org

Northern California Water Association
916- 442-8333
www.norcalwater.org

Mark Biddelcomb
Ducks Unlimited
916-852-2000
www.ducksunlimited.org

### *California Rice Commission*

Tim Johnson
916-442-8333
www.calrice.org

## San Joaquin Valley & Delta

### *San Joaquin County & Delta Water Quality Coalition*

John B. Meek
209-472-7127, ext. 125
jmeek@jmeek.com

### *Westside San Joaquin River Watershed Coalition*

Joseph C. McGahan
559-582-9237
jmcgahan@summerseng.com

### *East San Joaquin Water Quality Coalition*

Parry Klassen
Coalition for Urban/Rural
Environmental Stewardship
559-325-9855
parryk@comcast.net

Wayne Zipser
Stanislaus County Farm Bureau
209-522-7278
WayneZ@stanfarmbureau.org
www.esjcoalition.org

### *Root Creek Water District*

James Provost
559-449-2700

### *Southern San Joaquin Valley Water Quality Coalition*

Dawn Carlton
Kings River Conservation District
559-237-5567
dcarlton@krcd.org
www.krcd.org

### *Westlands Water District*

Thaddeus Bettner
559-241-6215
tbettner@westlandswater.org
www.westlandswater.org

Coalition for Urban/Rural Environmental Stewardship
531-D North Alta Ave.
Dinuba, CA 93618-3203